NEAT EVALUATION FOR AMDOCS:

Quality Engineering

Market Segment: AI-Based Analytics & Automation

Introduction

This is a custom report for Amdocs presenting the findings of the NelsonHall NEAT vendor evaluation for *Quality Engineering* in the *AI-Based Analytics & Automation* market segment. It contains the NEAT graph of vendor performance, a summary vendor analysis of Amdocs for quality engineering services, and the latest market analysis summary.

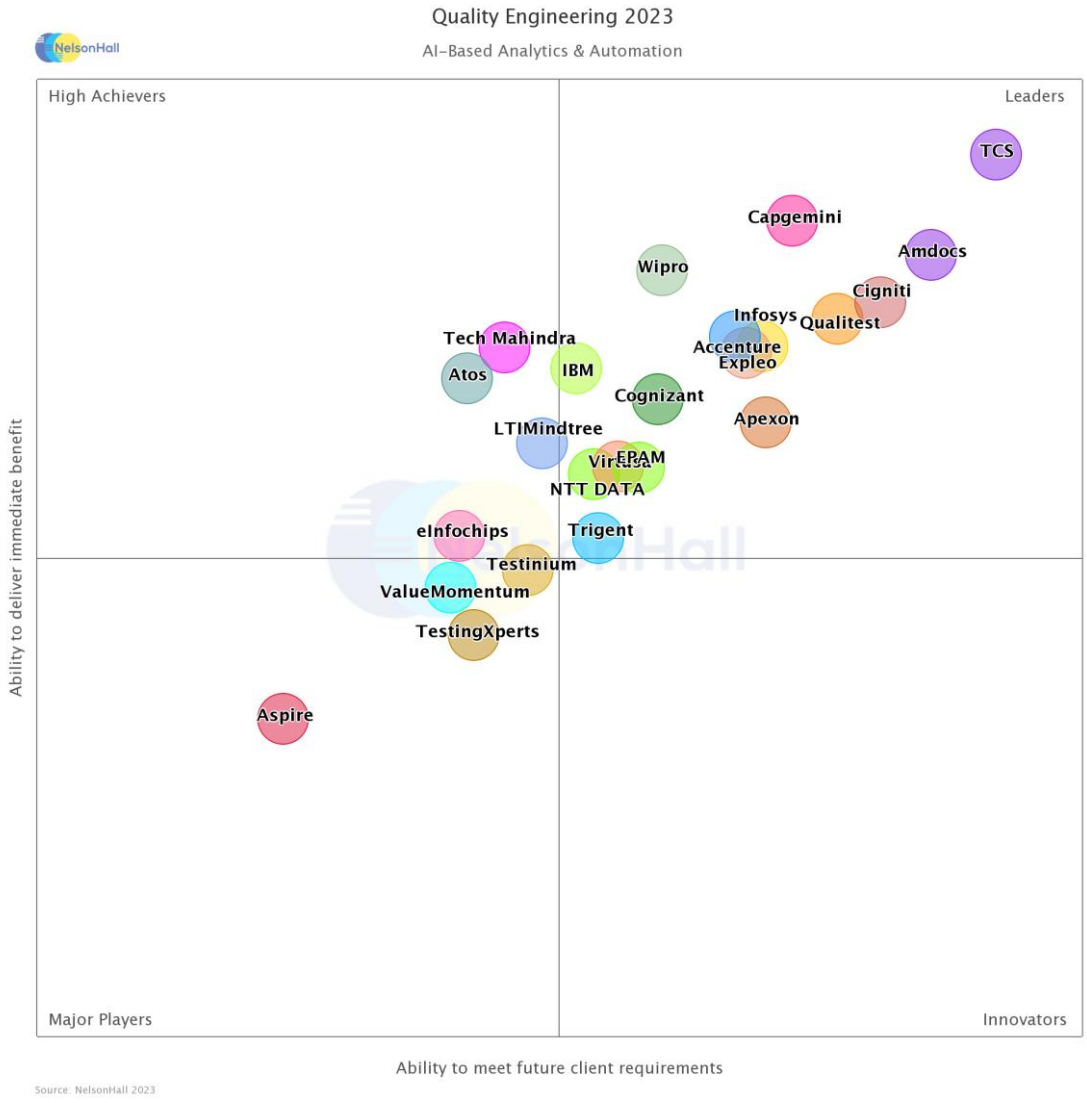
This NelsonHall Vendor Evaluation & Assessment Tool (NEAT) analyzes the performance of vendors offering quality engineering services (formerly referred to as software testing services). The NEAT tool allows strategic sourcing managers to assess the capability of vendors across a range of criteria and business situations and identify the best performing vendors overall, and with specific capability in application security testing, RPA-based test automation, AI-based analytics & automation, UX testing, cloud migration testing, and ERP & COTS testing.

Evaluating vendors on both their 'ability to deliver immediate benefit' and their 'ability to meet client future requirements', vendors are identified in one of four categories: Leaders, High Achievers, Innovators, and Major Players.

Vendors evaluated for this NEAT are: Accenture, Amdocs, Apexon, Aspire Systems, Atos, Capgemini, Cigniti, Cognizant, eInfochips, EPAM Systems, Expleo, IBM, Infosys, LTIMindtree, NTT DATA, Qualitest, TCS, Tech Mahindra, TestingXperts, Testinium, Trigent, ValueMomentum, Virtusa, and Wipro.

Further explanation of the NEAT methodology is included at the end of the report.

NEAT Evaluation: Quality Engineering (AI-Based Analytics & Automation)



NelsonHall has identified Amdocs as a Leader in the *AI-Based Analytics & Automation* market segment, as shown in the NEAT graph. This market segment reflects Amdocs' ability to meet future client requirements as well as delivering immediate benefits to its quality engineering clients with specific capability in AI-based analytics & automation.

Leaders are vendors that exhibit both a high ability relative to their peers to deliver immediate benefit and a high capability relative to their peers to meet future client requirements.

Buy-side organizations can access the *Quality Engineering* NEAT tool (*AI-Based Analytics & Automation*) here.

Vendor Analysis Summary for Amdocs

Overview

Amdocs Quality Engineering (AQE) has been part of Amdocs Services since 2005 and is currently under the Amdocs SI Services division. It provides testing services to Amdocs' traditional client base as part of its strategy to expand its software and IT service portfolio and activities.

In 2008, AQE, then known as Amdocs Testing, expanded its testing capabilities to include non-Amdocs product testing services, e.g., mobile and web applications and BSS/OSS applications. Approximately half of AQE's revenues are related to non-Amdocs products and applications.

In 2018, Amdocs Testing changed its name to Amdocs Quality Engineering to emphasize new testing technologies and services and the upskilling of its clients and workforce. NelsonHall estimates AQE's headcount to have been ~4,350 at the end of 2021 and up ~15% by the end of 2022. AQE is one of the growth engines for Amdocs.

AQE has articulated its growth strategy around three axes:

- *Further automation and service specialization*. AI plays an important role here, focusing on providing automation at scale
- *DevSecOps acceleration, digital, network, cloud, and UX*. The pandemic initiated strong demand for digital testing across mobile and connected device testing, 5G networks, UX, and cloud migration. AQE is accompanying Amdocs' corporate expansion in these offerings and has internal partnerships around GTMs and joint offerings (along with Managed Services and Consulting). Cloud and UX testing are driving AQE's growth
- *New growth initiatives*, e.g., geographical and vertical expansion and new services:
  - AQE has expanded in Eastern Europe and APAC, promoting its QE modernization approach to win new clients, emphasizing its consulting offering
  - AQE is gradually expanding its client base outside of telecom & media, with recent wins in the financial services sector, aligning with the larger Amdocs organization's strategy
  - Portfolio expansion continues to be a priority through partnerships, acquisitions, and organic growth. AQE has launched specialized capabilities such as virtualization as a service with Micro Focus, AI with Sealights, MBT with Otoma, crowdtesting with Applause, and test environment management with Quali.

Creating IP through technical accelerators and larger platforms has been AQE's priority for the past ten years. AQE continues to group all its technical assets into a larger platform, the Amdocs Cognitive Quality Platform (ACQP), formerly 36ONE. Amdocs continues to invest in the platform and has led several initiatives in the past year, e.g., Auto Pilot for automated test script generation.

As part of its platform and IP strategy, AQE is one of the few vendors releasing IPs to the open-source community to benefit from the community's involvement and get recognition in the industry. AQE released an important part of ACQP, Ginger (ginger.amdocs.com), to an Apache License 2.0. The practice also expands its open-source capabilities, such as API testing on the Linus operating system.

Financials

Amdocs had FY22 revenues (for the year ending September 30, 2022) of $4,577m. Its guidance for FY23 is revenue growth in CC in the range of 6%–10%. Revenues were $4,658m in calendar 2022.

AQE revenues were up in calendar 2022 thanks to large standalone QE deals, complemented by geographic expansion, e.g., in Eastern Europe and APAC. AQE also highlights that client demand favored transformational contracts, with consulting playing a key role in guiding organizations.

Strengths

- *Overall*: in the communication services space, Amdocs is a reference vendor. The company's software-led business model that results in service engagements is unique in the industry. The company is investing in newer areas, such as network virtualization, data monetization and 5G networks, and new business models along with media and financial services clients
- *Continuous testing*: Amdocs continues to invest in its portfolio and its Cognitive Quality Platform. The company brings incremental enhancements to its platform, e.g., test environment automated provisioning. In parallel, Amdocs expands the capabilities of developer workbenches such as multi-experience platforms, bridging tools used by developers and testers and potentially removing the siloed toolkits
- *AI-based analytics*: the service portfolio is comprehensive. Amdocs highlights that it deployed AI projects with ten clients, finetuning the accuracy of AI models and using more models
- *AI-based automation*: Amdocs now has both test script automated generation and maintenance capabilities. The company has continued to invest in Auto Pilot in the past 24 months, expanding its next-gen record-and-playback tool to mobile apps and also using RPA. NelsonHall acknowledges that competitors have partially caught up in designing their AI-based automation offerings and recognizes that few competitors are at the mobile app level yet. As with AI-based analytics, the company highlights it has gained greater experience and improved its offering by deploying AI-based automation with more clients
- *Application migration to the cloud testing*: this is probably where Amdocs progressed the most in the last year. The company expanded from its consulting approach and highlighted eight practices, including those relating to best practices, IAC testing, resilience, chaos engineering, and FinOps. Amdocs' new offering is comprehensive and automated
- *Cloud migration*: Amdocs favors a consultative approach to application migration projects across software and cloud infrastructure testing. The company uses its various pieces of IP for AI-based testing, performance testing, and data migration validation. It also uses hyperscaler tools for cloud infrastructure testing
- *IP and open-source*: Amdocs is one of two significant vendors taking a systematic approach to releasing testing IP as open-source. This approach differs significantly from most Indian vendors now monetizing their IP with a non-linear strategy in mind. Amdocs highlights its open-source-centric IP strategy helps the company get commitment from the open-source community, reassures clients about potential technology lock-in, and provides service opportunities and benefits in attracting talent.

Challenges

- *UX testing*: Amdocs is gradually building its expertise, shared between AQE and projekt202. Overall, AQE has automated accessibility and visual testing (with its own IP, saving clients' license costs) and works with crowdtesting pure-plays, while Projetk202 is active on the research side. Amdocs highlights it has intensified its coordination with Applause and projekt202, systematically addressing UX testing on top of its QE strengths
- *Application security testing*: Amdocs mostly has expertise and a service portfolio in line with the market, and it highlights that client demand is only emerging in application security testing
- *RPA testing*: the portfolio is nascent
- *ERP/enterprise application testing*: Amdocs relies on an MBT approach and complements it with a test data management offering. The offering is also nascent. However, we acknowledge that most competitors have nascent offerings in this space, and ERP/COTS testing probably has not been the priority for Amdocs given its telecom and software product background.

Strategic Direction

AQE is a strategic unit within the larger Amdocs company and has outperformed Amdocs' overall growth in the past two years. It has become a vehicle for winning new clients and helping other Amdocs units to cross-sell software and services. The practice believes its work in its service portfolio specialization and IP creation has paid off, driving growth well above the market. Much of its growth has come from large deals. AQE believes its business outcome pricing model has played well with clients, especially for testing front-office applications away from productivity KPIs and resources. AQE is also spearheading Amdocs' move to the financial services sector. The practice has several clients in ANZ, the U.K., and Israel. The U.S. is next.

Internal partnerships have accelerated the growth of AQE. Amdocs' Managed Services and Consulting have always been a significant channel for AQE. Sourced Group and projekt202 are gaining in strength. AQE accompanies these internal partnerships with investments in cloud migration and UX testing. AQE's next big step will be in 5G network testing, probably around related services such as monetization and IoT, which remain in AQE's more familiar area of application testing.

Transformation to QE and automation investment are, therefore, strategic for AQE. The practice continues to invest in automation and further enhance Ginger and other IPs. The company is one of the few that released its main automation IP to the open-source community and continues investing in it. This strategy differentiates from its Indian peers who sell their continuous testing IP. Beyond the open-source community, this initiative attracts talent and eases recruitment pressure.

Finally, AQE is investing ahead of market demand around next-gen digital technologies. An example is the metaverse (see *Outlook* below).

Outlook

Amdocs will continue to invest in its Ips; AQE finds that its clients are paying attention to these IP investments. An example is a prospect contacting AQE to customize Ginger, an IP that AQE has released to the open-source community.

Amdocs was one of the early vendors to address automated test script generation and maintenance. While adoption has been steady, NelsonHall believes AI-based automation will disrupt the QE industry and, finally, shorten the lengthy *requirements–test case writing–test script creation* process and generate test scripts automatically. NelsonHall welcomes Amdocs' early investment in this space.

AQE is also benefiting from Amdocs' overall product expansion, which years ago was around BSS and now is across 5G networks and media content management. Expect AQE to keep on strengthening its service portfolio from software to network. IoT platforms and connected devices testing are next, along with UX/CX. Within UX, multiverse testing will be a priority, as CX will merge with immersive technologies and lead to metaverse projects. AQE highlights that metaverse testing will expand its capabilities towards further testing of cloud and network resiliency, along with AI.

Quality Engineering Market Summary

Overview

The quality engineering (QE) market, also called software testing or quality assurance, is going through an extended growth cycle focused on continuous testing (i.e., testing under agile methodologies, using DevOps tools, and deploying automation). This cycle has been going for five years and still has significant growth potential: spending continues to grow in mid- to high-single digits.

QE vendors continue to invest in their continuous testing platforms, driving automation beyond functional testing to support services such as test environment and test data management, and non-functional testing.

AI is playing an increasing role, initially using analytics to conduct more selective and informed testing, driving productivity up. We think QE is on the verge of disruption with the pending introduction of AI-based automation to generate test scripts automatically. AI-based automation, combined with BDD and once-promising technologies such as model-based testing, will automate the 'requirements>test cases>scripts' cycle and shorten functional testing significantly.

Finally, quality engineering is becoming increasingly technical across existing and new areas (such as API testing and chaos engineering). This increasing technicality is driving major workforce reskilling investment in the context of talent shortages.

Buy-Side Dynamics

The three major client segments for QE services are:

- 'Agile Mainstream': organizations that are transitioning to hybrid agile (with digital projects adopting agile and non-digital remaining on waterfall methodologies). They are currently implementing DevOps tools (i.e., continuous testing) to increase their level of automation
- 'Advanced Automation': organizations that are engaged in an agile and continuous testing transformation like Agile Mainstreams. However, they look at emerging automation opportunities (e.g., AI-based automated test script creation, RPA tools) to reach new levels of automation, initially in functional testing
- 'Digital Matures': organizations that have several digital programs and look to automate digital technologies (e.g., Salesforce, application cloud migration).

'Agile Mainstream' clients select their QE vendors based on their past performance in similar projects, including internally and externally (with other clients); vendors must also demonstrate their ability to:

- Deploy continuous testing technologies to drive automation to serve agile projects
- Expand automation outside of functional execution and experiment with new functionality such as test support services (e.g., test data and environment management) and AI use cases
- Reskill manual testers towards technical services.

'Advanced Automation Organizations' select their QE vendors based on their ability to demonstrate:

- Their investment in AI use cases, initially around AI-based analytics and expanding to automation
- Best practices and sharing a clear view of the art of the possible
- Change management capabilities to drive tester buy-in.

For 'Digital Matures', vendors must demonstrate the following:

- They either specialize in testing digital technology (e.g., Salesforce, applications migrated to the cloud) or have both build and test capabilities. If the digital technology comes from an ISV, vendors must demonstrate they have formalized their partnership with the technology vendor. They also need to articulate their status level and what that level means
- Their QA capabilities can effectively play the role of a quality gate and must be independent of the implementation/development team
- They bring automation capabilities rather than manual functional expertise.

Market Size & Growth

The global software testing services market size in 2023 is ~$42bn.

NelsonHall expects a deceleration in 2023 (+6%), led by mediocre GDP growth projections. This deceleration comes after solid growth in 2022 (+8%) driven by the digital and cloud catch-up that followed the 2020 pandemic.

Spending will reach $52bn in 2027, representing a +6% CAGR in the period 2022-2027.

Outlook

Functional testing represents most software testing services spending (82%). Its spending has specific dynamics resulting from the secular decline in manual testing, the rise of automation, the fast growth of digital testing, and the steadier acceptance of COTS testing.

Specialized testing activities cover non-functional, test support services, cognitive, and other activities (including UX testing). Organizations are turning to more specialized and technical testing activities as they expand their usage of automation (to test support services), consider the benefits of AI applied to QA, and emphasize non-functional. Overall specialized testing has a 10% CAGR, twice as fast as testing services overall.

NEAT Methodology for Quality Engineering

NelsonHall's (vendor) Evaluation & Assessment Tool (NEAT) is a method by which strategic sourcing managers can evaluate outsourcing vendors and is part of NelsonHall's *Speed-to-Source* initiative. The NEAT tool sits at the front-end of the vendor screening process and consists of a two-axis model: assessing vendors against their 'ability to deliver immediate benefit' to buy-side organizations and their 'ability to meet future client requirements'. The latter axis is a pragmatic assessment of the vendor's ability to take clients on an innovation journey over the lifetime of their next contract.

The 'ability to deliver immediate benefit' assessment is based on the criteria shown in Exhibit 1, typically reflecting the current maturity of the vendor's offerings, delivery capability, benefits achievement on behalf of clients, and customer presence.

The 'ability to meet future client requirements' assessment is based on the criteria shown in Exhibit 2, and provides a measure of the extent to which the supplier is well-positioned to support the customer journey over the life of a contract. This includes criteria such as the level of partnership established with clients, the mechanisms in place to drive innovation, the level of investment in the service, and the financial stability of the vendor.

The vendors covered in NelsonHall NEAT projects are typically the leaders in their fields. However, within this context, the categorization of vendors within NelsonHall NEAT projects is as follows:

- Leaders: vendors that exhibit both a high ability relative to their peers to deliver immediate benefit and a high capability relative to their peers to meet client future requirements
- High Achievers: vendors that exhibit a high ability relative to their peers to deliver immediate benefit but have scope to enhance their ability to meet client future requirements
- Innovators: vendors that exhibit a high capability relative to their peers to meet client future requirements but have scope to enhance their ability to deliver immediate benefit
- Major Players: other significant vendors for this service type.

The scoring of the vendors is based on a combination of analyst assessment, principally around measurements of the ability to deliver immediate benefit; and feedback from interviewing of vendor clients, principally in support of measurements of levels of partnership and ability to meet future client requirements.

Note that, to ensure maximum value to buy-side users (typically strategic sourcing managers), vendor participation in NelsonHall NEAT evaluations is free of charge and all key vendors are invited to participate at the outset of the project.

Exhibit 1

'Ability to deliver immediate benefit': Assessment criteria

Assessment Category	Assessment Criteria
Offerings	Continuous testing Application migration to the cloud QA AI-based analytics AI-based automation RPA-based automation UX research and testing: Usability UX research and testing: Accessibility UX testing: other Application security testing Enterprise application testing
Delivery	Indian delivery capability U.S. onshore capability EMEA onshore capability Offshore leverage
Presence	Customer presence globally Customer presence in N. America Customer presence in EMEA Customer presence in APAC Customer presence In LatAm
Benefits Achieved	Level of cost savings achieved Increased application quality/reduced production downtime Increased speed-to-market for digital initiatives Increased end-user/business satisfaction/UX Other benefits achieved Pricing approach

Exhibit 2

'Ability to meet client future requirements': Assessment criteria

Assessment Category	Assessment Criteria
Levels of Investment	Continuous testing Application migration to the cloud QA AI-based analytics AI-based automation RPA-based automation Usability testing Accessibility testing UX testing: Other Application security testing Enterprise application testing
Ability to Innovate	Mechanisms in place to deliver client automation innovation Extent to which client perceives that automation innovation has been delivered Suitability of vendor to meet future continuous testing needs of clients Suitability of vendor to meet future cognitive testing needs of clients Suitability of vendor to meet future UX testing needs of clients Perception of suitability to meet future needs for other technologies
Other	Market momentum Financial security

For more information on other NelsonHall NEAT evaluations, please contact the NelsonHall relationship manager listed below.

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Sales Inquiries

NelsonHall will be pleased to discuss how we can bring benefit to your organization. You can contact us via the following relationship manager:

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